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EXAMINER	
LAM, ANN Y	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/754,457	KODADEK, THOMAS	
	Examiner	Art Unit	
	ANN Y. LAM	1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 June 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-5 and 11-35* is/are pending in the application.

4a) Of the above claim(s) *28-35* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-5 and 11-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 4, 5 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dower et al., 6,465,430, in view of Hudson et al., 20020018749, and further in view of Wehland et al., 20040171068, and Liotta et al. 6,153,596.

Dower et al. teach that when using random peptide generation systems that allow for multivalent ligand-receptor interaction, one must recognize that the density of the immobilized receptor is an important factor in determining the affinity of the ligands that can bind to the immobilized receptor. At higher receptor densities (e.g., each anti-receptor antibody-coated well treated with 0.25 to 0.5 mg of receptor), multivalent binding is more likely to occur than at lower receptor densities (e.g., each anti-receptor antibody-coated well treated with 0.5 to 1 ng of the receptor). If multivalent binding is occurring, then one will be more likely to isolate ligands with relatively lower affinity, unless one uses high densities of immobilized receptor to identify lead compounds and uses lower receptor densities to isolate higher affinity derivative compounds (col. 13, lines 25-38.) In short Dower et al. teach that for multivalent ligand-receptor interaction, using higher receptor densities will increase the

likelihood of multivalent binding than at lower receptor densities, which thus increases the likelihood of isolating ligands with relatively lower affinity. It is understood that the multivalent ligand-receptor interaction relates to the target ligand binding to multiple receptors. Dower et al. emphasizes that the multivalent binding permits the detection of binding events of low intrinsic affinity (col. 33, lines 42-55.)

It is noted that Applicant's claim recites a "composition" but it appears that this term is used to refer to what is generally understood to be an article since the claimed invention includes a surface, i.e., binding elements on a surface.

It is also noted that Applicant's invention is based on the discovery that high density will increase the likelihood of the multivalent binding between receptors and the target 'as some fraction of the possible pairs of molecules on the surface will have an appropriate geometry relative to one another to bind the target molecule" (page 4, lines 23-27.) Such discovery is also disclosed by Dower et al. (col. 13, lines 25-38.)

As to claim 1, Dower et al. disclose comcomitant binding of a target molecule to two or more binding elements on a surface (col. 13, lines 25-38 and col. 33, lines 42-55). It appears that on page 4, lines 20-21 Applicant provides a precise definition for "low to modest affinity" as an equilibrium dissociation constant between 10^{-3} M to 10^{-8} M. Thus the term "low-to-moderate affinity" in Applicant's claims will be interpreted based on this definition. While Dower et al. use the term "relatively lower affinity" but does not provide a definition or example, Dower et al. nevertheless provides a general disclosure regarding multivalent bonding between the target ligand and multiple receptors as discussed above. Given the general teachings of Dower et al., the skilled

artisan would have utilized this knowledge for binding various desired targets, which would encompass multivalent targents, using their respective receptors, including binding receptors having low affinity as defined by Applicant, i.e., those having an equilibrium dissociation constant between 10^{-3} M to 10^{-8} M. Such resulting multivalent binding results in a high affinity interaction, as illustrated by Dower et al.,.

It is noted that while the above cited disclosure by Dower et al. in column 13, lines 25-38, generally disclose the density of the immobilized receptor is an important factor in determining the affinity of the ligands that can bind to the immobilized receptor, and that at higher receptor densities, multivalent binding is more likely to occur than at lower receptor densities, and the above disclosure by Dower et al. in column 33, lines 42-55 give an example of using a LacI-peptide fusion protein for detection of the peptide, the skilled artisan would have reasonably concluded hat the general concept of multivalent binding at high density will occur for other multivalent analytes and is not limited to LacI-peptide fusion protein. Such conclusion is also supported by the disclosure by Hudson et al., as discussed more fully below.

Hudson et al. disclose that due to polyvalent binding to multiple antigens, trimers, tetramers and higher multimers exhibit a gain in functional affinity over the corresponding monomeric or dimeric molecules. This improved avidity makes the polymeric scFvs particularly attractive as therapeutic and diagnostic reagents. Furthermore the ability to utilise polycistronic expression vectors for recombinant production of these molecules enables polyspecific proteins to be produced. Paragraph 0024.

In an example in paragraph 0155, Hudson et al. show that increases in affinity for dimeric and trimeric scFvs binding to immobilized 3-2G12 Fab arise from multivalent bidning (an avidity effect) when dimmers and trimers are used as analytes in biosensor or ELISA affinity measurements.

Thus, the disclosure by Hudson et al. reinforces that the general concept of multivalent binding to receptors on a solid support increases affinity applies to various different multivalent analytes, and is not limited to any specific type of multivalent analyte. It would have been obvious to the skilled artisan that such other types of analytes encompass binding partners to peptoids, and that multivalent binding will occur where the analytes are multivalent and the peptoid densities are high enough, as disclosed by Dower et al. The skilled artisan would have been motivated to utilize peptoids as they are known in the art for drug screening for example, and such is disclosed by Wehland et al., and Liotta et al., as discussed more fully below.

Wehland et al. disclose that well-established examples of such arrays are: nucleic acid arrays of DNA fragments, cDNAs, RNAs, etc., and compound arrays of synthetic peptides, their analogues, such as peptoids, oligocarbamates etc. or generally organic chemical compounds. Paragraphs 0003 and 0004.

Moreover, Liotta et al. disclose that peptoids, i.e., N-substituted oligoglycines, have been considered for the development of pharmaceuticals. Peptoid libraries, prepared by combinatorial synthesis have been screened for peptoids having biological function. Such libraries have, for example, been screened for peptoids with affinity for binding to ligands. Liotta et al. also cite prior art that discloses a method for generating

and screening peptoid libraries to isolate peptoids that bind to protein or peptide receptors. Liotta et al. also disclose that conjugates of selected peptoids can also be made (col. 7, lines 23-51.)

Thus, the disclosures by Wehland et al. and Liotta et al. show that use of peptoids arrays are known in the art for performing diagnostic assays as may be desirable in the field of pharmaceuticals for example. As stated earlier, the skilled artisan would have reasonably concluded that the general concept of multivalent binding at high density for multivalent analytes applies to various different types of multivalent analytes, and it would have been obvious to the skilled artisan that such other types of analytes encompass binding partners to peptoids where such analytes are multivalent. Moreover, the skilled artisan would have been motivated to increase the density of the peptoids such that multivalent binding occurs between a multivalent analyte and the peptoids because this allows for detection of otherwise low affinity analytes, as disclosed by Dower et al.

As to claim 4, since Applicant has not defined or otherwise recite what "operatively coupled" means, the first peptoid binding element is deemed to be operatively coupled to the second peptoid binding element through at least the solid support since both are immoblized to the support.

As to claim 5, since Applicant has not recited further description of the spacer, the receptor on the support inherently includes a region other than the binding region, which is considered a spacer operatively coupled to the first binding element, the second binding element or both the first and second binding element. (It is also noted

that Dower et al. disclose that compounds may also include spacers or linkers in cases where the compounds are to be attached to a solid support.(col. 28, lines 4—42.)

As to claim 15, the skilled artisan would have recognized that the diagnostic assays that can be performed as discussed above in claim 1 encompass assaying any of various types of samples. Blood, urine and cell lysate are well known types of samples tested in diagnostic assays for various purposes. Dower et al. for example disclose a sample that is a cell lysate (col. 33, lines 13 -16.)

As to claim 16, Dower discloses that immobilized materials may be labeled to provide a detectable signal for medical research and diagnostic uses (col. 28, lines 47-52.)

As to claims 17 and18, the skilled artisan would have recognized that the diagnostic assays that can be performed as discussed above in cliam 1 encompass assaying any of various types of analytes. Polypeptides are well known types of analytes tested in diagnostic assays for various purposes. Dower et al. for example disclose a target molecule that is a biological molecule, e.g., thrombopoietin receptor, TPO-R (28, 43-47), which is a polypeptide.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dower et al., 6,465,430, in view of Hudson et al., 20020018749, and Wehland et al.,

20040171068, and Liotta et al. 6,153,596, as applied to claim 1 above, and further in view of Bellet et al., 5,011,771.

Claim 1 has been discussed above. Claim 3 further recites that the plurality of peptoid binding elements comprise at least a first and a second binding element having distinct binding specificity for a target molecule as compared to each other.

However, multivalent targets having different epitopes for different binding partners and that allow for simultaneous binding to the binding partners are known in the art, as illustrated by Bellet et al. in disclosing assays for multivalent antigens that have binding sites for at least two antibodies each against a different epitope on the antigen (col. 2, lines 44-52) wherein the epitopes are sufficiently separated from one another so as to allow simultaneous binding of a different immobilized antibody to each of the epitopes (col. 8, lines 45-61.)

It would have been obvious to one of ordinary skills in the art to utilize different binding partners, such as peptoids, for simultaneous binding to the target as disclosed by Dower et al. in the case in which the target is multivalent and has different epitopes for different binding partners, since the skilled artisan would have recognized that the same principle disclosed by Dower et al, that is, using high receptor densities to increase the likelihood of multivalent binding of a molecule to the immobilized receptors, applies also in the case in which the multivalent target molecule has different epitopes for different binding partners.

Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dower et al., 6,465,430, in view of Hudson et al., 20020018749, and Wehland et al., 20040171068, and Liotta et al. 6,153,596, as applied to claim 1 above, and further in view of Ring, 5,705,614, and Bellet et al., 5,011,771

As to claims 11-13, while Ring does not teach that the first peptoid binding element is operatively coupled to a terminal monomer of the second peptoid binding element (claim 11), or an internal monomer of the second peptoid binding element (claim 12), or that a plurality of first peptoid binding elements are operatively coupled to the second peptoid binding elements (claim 13), such chemistries would have been within the skills of the ordinary artisan given the teachings of Ring regarding use of various known cross-linkers to link various digested fragments as desired, as discussed below.

Ring teaches that bispecific oligomers may be made by linking two different entities that have been digested. More specifically, Ring teaches that bispecific antibodies are generally obtained in one of two ways: (1) generation by chemical linkage; or (2) production by engineered cell lines. Chemical linkage involves the linking of either two entire monoclonal or polyclonal antibodies, or antigen-specific fragments thereof. Two such entities having different specificities are linked using a chemical crosslinking agent conventional in the art. Alternatively, each antibody may be digested to produce F(ab')2 fragments, which may then be reduced to produce individual Fab' fragments. One Fab' fragment may then be derivatized with a reagent

and then reacted with the second Fab' fragment of different specificity to regenerate a linkage at the hinge region and create a bispecific F(ab')2 fragment, which is referred to as a heterodimer or oligomer (col. 9, col. 33-60.)

Moreover, Bellet et al. teach that multivalent targets having different epitopes for different binding partners allow for simultaneous binding to the binding partners are known in the art. Bellet et al. in discloses assays for multivalent antigens that have binding sites for at least two antibodies each against a different epitope on the antigen (col. 2, lines 44-52) wherein the epitopes are sufficiently separated from one another so as to allow simultaneous binding of a different immobilized antibody to each of the epitopes (col. 8, lines 45-61.)

It would have been within the skills of the ordinary artisan at the time the invention was made to utilize the Bellet et al. and Ring teachings to link peptoids in any of various ways such that the binding elements for the target have distinct binding specificity by using the chemistries as taught by Ring in a configuration that allows for the simultaneous binding of the two binding elements to the target, as taught by Bellet et al., and that such linking encompass the linkings recited by Applicant, as would be desirable for binding to a multivalent target that has different epitopes for different binding partners.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dower

et al., 6,465,430, in view of Hudson et al., 20020018749, and Wehland et al., 20040171068, and Liotta et al. 6,153,596, as applied to claim 1 above, and further in view of Schwartz, 6,800,728.

In claim 14, Applicant claims that the support is a chemically-modified glass slide.

Schwartz disclose solid supports, including beads or glass slides that have been modified by reaction with a bifunctional reagent. The modified solid supports are useful in immobilization of biomolecules for diagnostic applications (col. 3, line 60 – col. 4, line 3.) Schwartz also disclose the use of such modified slides to prepare microarrays of biomolecules (col. 20, line 54 – col. 21, line 14.)

While Dower et al. disclose immobilized binding elements but do not disclose the details of how the binding elements are immobilized, in particular that the solid support is a chemically-modified glass slide, the skilled artisan would have looked to the art for immobilization techniques and various types of appropriate solid supports, such as the Schwartz chemically-modified glass slide.

Claims 19, 20, 22 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dower et al., 6,465,430, view of Hudson et al., 20020018749, and Wehland et al., 20040171068, and Liotta et al. 6,153,596, as applied to claim 1 above, and further in view of Chin et al., 6,197,599 .

It is claimed in claim 19 that the first target molecule is a modified polypeptide, and in claim 20 that the modification is phosphorylation or ubiquitylation.

Chin et al. teach that protein posttranslational modifications (e.g., phosphorylation, glycosylation, and ubiquitination) play critical roles in regulating protein activity and that simultaneously detecting and identifying multiple phosphorylated proteins is highly desirable for signal transduction studies and clinical diagnosis (col. 2, lines 4-21.)

Chin et al. teach that protein array allows rapid detection of many proteins and thus makes it possible to compare protein expression profiles from different sources or those from the same source but under different conditions. Information on protein expression profile is very useful in identifying diagnostic and therapeutic targets. Protein array also makes it possible to detect posttranslational modifications of numerous proteins and provide a valuable tool to investigate protein and cellular regulations. Moreover, protein arrays can screen a large number of potential interactions directly; and it can detect interactions that take place only under certain conditions, e.g., phosphorylation.

It is further disclosed that in order to reveal the broad protein expression pattern in a source (e.g. a cell line), thousands of different antibodies are immobilized in a single support. The number of different agents immobilized on one solid support varies depending on the particular applications (col. 4, lines 40-53.) The proteins in the samples can be labeled, and after removing unbound material, the proteins are detected. Because the antibodies are immobilized in a predetermined order, the

identity of the protein captured at each position is therefore known (4, 54- col. 5, line 17.) Phosphorylation or ubiquitination can be identified using specific antibodies (col.5, lines 17-38, col. 7, lines 8-32.) Many proteins can be simultaneously examined with an array comprising a large umber of immobilized antibodies (col. 6, line 46 – col. 7, line 5.)

As to claims 19 and 20, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the assay teachings as discussed above regarding claim 1 to detect modifications such as phosphorylation or ubiquitination as taught by Chin et al. by using the appropriate chemistries known, as would be usefull in identifying diagnostic and therapeutic targets, as taught by Chin et al.

As to claim 22, it modifying the assay as discussed above regarding claim 1 to simultaneously detect multiple targets, as suggested by Chin et al., the skilled artisan would utilize a different set of binding elements for the second target. This different set of binding elements is equivalent to the claimed “third and fourth low-to-moderate binding element”.

Claim 24 recites that the third and fourth binding elements have distinct binding specificity as compared to the first and second low affinity binding elements. Chin et al. teach that thousands of different antibodies can be immobilized in a redetermined order and the targets labeled. Because the antibodies are immobilized in a predetermined order, the identity of the protein captured at each position is therefore known (4, 54- col. 5, line 17.) Many proteins can be simultaneously examined with an

array comprising a large umber of immobilized antibodies (col. 6, line 46 – col. 7, line 5.) The skilled artisan would thus be motivated to provide the diagnostic assay in the format disclosed by Chin et al., i.e., in respective sets of binding affinities for the different targets as discussed above, in an array since Chin et al. teach that this allows for the advantage of simultaneously detecting a large quantity of targets, as would be desirable for convenience.

Claims 25-26 recite that the first and second low affinity binding elements are segregated from the third and fourth low affinity binding elements on the solid support. It is understood in the art that in an array, the immobilized elements are separated from each other in spots. The skilled artisan would have reasonable expectation of success since the skilled artisan would recognize that in the modification of the assay discussed in claim 22 above, to detect multivalent target molecules with epitopes having distinct binding specificities to different binding partners/elements, the different binding partners/elements used to identify one type of target molecule is placed in separate spots from the different binding partners/elements used to identify the other type of target molecule.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dower et al., 6,465,430, view of Hudson et al., 20020018749, and Wehland et al.,

20040171068, and Liotta et al. 6,153,596, and Chin et al., 6,197,599, as applied to claim 22 above, and further in view of Ring, 5,705,614, and Bellet et al., 5,011,771.

Claim 23 recites that the third and fourth binding elements are distinct from each other. Such chemistries would have been within the skills of the ordinary artisan given the teachings of Ring regarding use of various known cross-linkers to link various digested fragments as desired, as discussed below.

Ring teaches that bispecific oligomers may be made by linking two different entities that have been digested. More specifically, Ring teaches that bispecific antibodies are generally obtained in one of two ways: (1) generation by chemical linkage; or (2) production by engineered cell lines. Chemical linkage involves the linking of either two entire monoclonal or polyclonal antibodies, or antigen-specific fragments thereof. Two such entities having different specificities are linked using a chemical crosslinking agent conventional in the art. Alternatively, each antibody may be digested to produce F(ab')2 fragments, which may then be reduced to produce individual Fab' fragments. One Fab' fragment may then be derivatized with a reagent and then reacted with the second Fab' fragment of different specificity to regenerate a linkage at the hinge region and create a bispecific F(ab')2 fragment, which is referred to as a heterodimer or oligomer (col. 9, col. 33-60.)

Moreover, Bellet et al. teach that multivalent targets having different epitopes for different binding partners allow for simultaneous binding to the binding partners are known in the art. Bellet et al. in discloses assays for multivalent antigens that have binding sites for at least two antibodies each against a different epitope on the antigen

(col. 2, lines 44-52) wherein the epitopes are sufficiently separated from one another so as to allow simultaneous binding of a different immobilized antibody to each of the epitopes (col. 8, lines 45-61.)

It would have been within the skills of the ordinary artisan at the time the invention was made to utilize the Bellet et al. and Ring teachings to link peptoids in any of various ways such that the binding elements for the target have distinct binding specificity by using the chemistries as taught by Ring in a configuration that allows for the simultaneous binding of the two binding elements to the target, as taught by Bellet et al., and that such linking encompass the linkings recited by Applicant, as would be desirable for binding to a multivalent target that has different epitopes for different binding partners.

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dower et al., 6,465,430, in view of Hudson et al., 20020018749, and Wehland et al., 20040171068, and Liotta et al. 6,153,596, as applied to claim 1 above, and further in view of Monteforte, 7,091,046.

Claim 21 recites that the binding elements are distributed randomly on the surface of the support (i.e., such that some binding elements are not distributed in a pattern).

Monteforte discloses that molecules may be distributed and identified by position on the solid phase or by virtue of an identifiable or detectable label. The solid phase

may be a surface with identifiable loci on its surface or the solid phase may be beads in solution or spread on a support (col. 12, 32-50.) Moreover, using labels such as nanocrystals allow for simultaneous detection (col. 33, lines 17-35). It would have been obvious to the skilled artisan to provide the diagnostic elements as discussed regarding claim 1 above to provide multiple binding elements to detect more than one target, wherein the respective sets of binding elements may be randomly distributed on a surface, since Montefort discloses that using multiple nanocrystal labels allows for simultaneous detection by detecting the label, i.e., regardless of position on a substrate.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dower et al., 6,465,430, in view of Hudson et al., 20020018749, and Wehland et al., 20040171068, and Liotta et al. 6,153,596, as applied to claim 26 above, and further in view of Monteforte, 7,091,046.

Claim 27 recites that the binding elements are distributed randomly on the surface of the support (i.e., such that some binding elements are not distributed in a pattern).

Monteforte discloses that molecules may be distributed and identified by position on the solid phase or by virtue of an identifiable or detectable label. The solid phase may be a surface with identifiable loci on its surface or the solid phase may be beads in solution or spread on a support (col. 12, 32-50.) Moreover, using labels such as

nanocrystals allow for simultaneous detection (col. 33, lines 17-35). It would have been obvious to the skilled artisan to provide the diagnostic elements as discussed regarding claim 1 above to provide multiple binding elements to detect more than one target, wherein the respective sets of binding elements may be randomly distributed on a surface, since Montefort discloses that using multiple nanocrystal labels allows for simultaneous detection by detecting the label, i.e., regardless of position on a substrate.

Response to Arguments

Applicant's arguments been fully considered but they are not persuasive.

Applicant argues that the previously recited references do not teach a peptoid array as claimed. This is not persuasive for the reasons set forth above. As shown in the discussion of claim 1, peptoid arrays are known in the art, and use of high density receptors to bind to low affinity, multivalent analytes are also known in the art, and the combination of these two concepts would have been obvious for the reasons elaborated above in the discussion of claim 1.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANN Y. LAM whose telephone number is (571)272-0822. The examiner can normally be reached on Mon.-Fri. 10-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Shibuya can be reached on 571-272-0806. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ann Y. Lam/
Primary Patent Examiner, Art Unit 1641